

[illegible]

1. An isolated nucleic acid molecule encoding hlre1p comprising the nucleotide sequence of Figures 8A and 8B.
2. A vector comprising the nucleic acid molecule of Claim 1.
3. A cell transformed with the nucleic acid molecule of Claim 1.
4. The cell of Claim 3, wherein the cell is a mammalian cell.
5. The cell of Claim 3, wherein the cell is a bacterial cell.
6. A protein comprising a polypeptide encoded by the nucleic acid molecule of Claim 1.
7. A transfected cell producing the protein of Claim 6.
8. An antibody specific for the protein of Claim 6.
9. The antibody of Claim 8 wherein the antibody is monoclonal.
10. The antibody of Claim 8 wherein the antibody is polyclonal.
11. An isolated polynucleotide selected from the group consisting of:
  - a) a polynucleotide comprising the nucleotide sequence of Figures 8A and 8B,
  - b) a polynucleotide encoding a protein comprising the amino acid sequence of Figure 9,
  - c) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of Figure 9, having biological activity,
  - d) a polynucleotide which is an allelic variant of the polynucleotide of a) and,
  - e) a polynucleotide which encodes a species homologue of the protein of b) or c).
12. An isolated polynucleotide of Claim 11 wherein said polynucleotide is operably linked to an expression control sequence.

*Sum ci*  
13. A host cell transformed with a polynucleotide of Claim 1.

14. The host cell of Claim 13, wherein said cell is a mammalian cell.

15. The host cell of Claim 13, wherein the cell is a bacterial cell.

16. A process for producing a protein encoded by a polynucleotide of Claim 12, which process comprises:

- a) growing a culture of the host cell of Claim 13 in a suitable culture medium; and
- b) purifying said protein from the culture.

17. A protein produced according to the process of Claim 16.

18. The protein of Claim 17 comprising a mature protein.

✓ 19. An isolated protein, wherein the protein comprises an amino acid sequence selected from the group consisting of:

- a) the amino acid sequence of Figure 9, and
- b) fragments of the amino acid sequence of Figure 9,

the protein being substantially free from other mammalian proteins.

✓ 20. A cell comprising mutated hlre1p.

21. The cell of Claim 20, wherein the cell is a mammalian cell.

22. The cell of Claim 20, wherein the cell is a bacterial cell.

✓ 23. A nucleic acid probe comprising at least a fragment of a nucleic acid molecule comprising a nucleotide sequence capable of hybridizing under stringent conditions to the nucleotide sequence of Figures 8A and 8B, wherein the probe is of a length sufficient to hybridize with a complementary nucleic acid sequence thereto.

24. A method of screening a sample for a nucleic acid molecule encoding

Ire1p, wherein the sample comprises nucleic acid sequences, comprising the steps of:

a) contacting the sample with the nucleic acid probe of Claim 23 wherein the nucleotides represented by "T" are selected from the group consisting of thymidine or uracil; and

5 b) detecting hybridization of the probe to complementary nucleic acid sequences encoding Ire1p in the sample.

25. A nucleic acid probe comprising at least a fragment of a nucleic acid molecule comprising a nucleotide sequence capable of hybridizing under stringent conditions to the complement of the nucleotide sequence of Figures 8A and 8B, wherein the probe is of a length sufficient to hybridize with a complementary nucleic acid sequence  
5 thereto.

26. A method of screening a sample for a nucleic acid molecule encoding Ire1p, wherein the sample comprises nucleic acid sequences, comprising the steps of:

a) contacting the sample with the nucleic acid probe of Claim 25 wherein the nucleotides represented by "T" are selected from the group consisting of  
5 thymidine or uracil; and

b) detecting hybridization of the probe to complementary nucleic acid sequences encoding Ire1p in the sample.

*Sub C2*  
27. A method of increasing the survival of a cell comprising transforming the cell with the nucleotide sequence of Figures 8A and 8B.

28. The method of Claim 27, wherein said cell has been exposed to an anti-cancer treatment.

*Sub C3*  
29. The method of Claim 28 wherein the anti-cancer treatment is adriamycin.

30. A method of increasing the sensitivity of a cell to death comprising inhibiting the expression of *hIRE1* in said cell.